

EH0380-US-1

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WHAT IS CLAIMED IS:

1. A measuring arrangement comprising:

5 a measuring instrument and a higher-order unit, said measuring instrument and said higher-order unit being electrically connected with each other by a first pair of lines and a second pair of lines,

 wherein during operation a signal current flows via said first pair of
10 lines and a supply current flows via said second pair of lines, said signal current representing an instantaneous measured value and said supply current and at least a portion of the signal current supply said measuring instrument.

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2. The measuring arrangement as claimed in claim 1 wherein the supply current varies in accordance with a current power demand of said measuring instrument.

20 3. The measuring arrangement as claimed in claim 1 wherein the higher-order unit comprises at least two transmitter feed units, each of said transmitter feed units being operable to supply a conventional two-wire measuring instrument with electrical power.

25 4. The measuring arrangement as claimed in claim 3 wherein each of said first and said second pairs of lines is connected, respectively, with one of said at least two transmitter feed units.

30 5. The measuring arrangement as claimed in claim 3 wherein each of said at least two transmitter feed units is connected with one of said first and said second pairs of lines, respectively.

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6. The measuring arrangement as claimed in claim 1 wherein each of said first and said second pairs of lines is connected to a current/voltage limiter.

7. The measuring arrangement as claimed in claim 1 wherein said first
5 and said second pairs of lines are galvanic isolated from each other.

8. The measuring arrangement as claimed in claim 1 wherein the measuring instrument comprises a sensor for detecting at least one physical variable.
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9. The measuring arrangement as claimed in claim 8 wherein the higher-order unit comprises a bus line for transmitting measured values representing said at least one physical variable.

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10. An adapter circuit system for an electrically powered measuring device, wherein two ports are provided constituting a two-wire interface for connecting a dual-conductor cable by way of which electric power is fed to the measuring device and a measuring signal from the measuring device
- 5 is transmitted wherein at least one additional port is provided for connecting a second cable and wherein the said second cable allows the feeding of additional electric power to the measuring device.
11. The adapter circuit system as in claim 10, wherein two ports are
- 10 provided, constituting a second two-wire interface for connecting a second dual-conductor cable.
12. The adapter circuit system as in claim 11, wherein the current emanating from the first two-wire interface and/or the current emanating
- 15 from the second two-wire interface is limited.

13. The adapter circuit system as in claim 11, wherein the first two-wire interface and the second two-wire interface connect to a voltage regulator provided at the input of the measuring device

14. The adapter circuit system as in claim 11, wherein the current emanating from the first two-wire interface is regulated by means of a first linear regulating transistor controlled by the voltage regulator or by the measuring device.

15. The adapter circuit system as in claim 11, wherein the current emanating from the second two-wire interface is regulated by means of a second linear regulating transistor controlled by a circuit.

16. The adapter circuit system as in claim 11, wherein the current emanating from the second two-wire interface is regulated by means of a second linear regulating transistor controlled by the voltage regulator or by the measuring device.

17. The adapter circuit system as in claim 11, wherein a rectifier is connected in series respectively with the first two-wire interface and/or the second two-wire interface.

18. A measuring device wherein two ports are provided constituting a two-wire interface for connecting a dual-conductor cable by way of which electric power is fed to the measuring device and a measuring signal is transmitted from the measuring device to an evaluation circuit, wherein at least one additional port is provided for connecting a second cable, the said second cable allowing the feeding of additional electric power to the measuring device, providing the possibility to either use the measuring device in an intrinsically safe mode by only using the said two ports of the two-wire interface or to use the measuring device in a non-intrinsically safe mode by using the said two ports of the two-wire interface and the said additional port to which the said second cable is connected.